Improvement In Employee Retention Of Business Organizations Through Utilization Of Big Data Analytics

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Abstract

Aim/Purpose This study attempts to examine the way Big Data Analytics assists business organizations in their talent management, hiring and thereby employee retention process

Background In the last decades, the utilisation of Big Data that refers to the large volume of structured and unstructured data produced through routine activities of organisation has become quite popular within business organisations. This paper analyses few effective Big Data Analytic tools used in organisations for analysing huge volumes of data.

Methodology This article follows significant and main phases of **PRISMA methodology** that includes eligibility, identification along with screening.

Contribution In this study the importance of Artificial Intelligence and Machine Learning is explored in the context of employee retention to examine the effectiveness of data driven decisions.

Findings The key finding of the study reveals that the executives are applying predictive analysis while hiring the potential talents as it helps in finding the skilled and experienced candidate for an organisation by analysing inbound and progression variables of the employees.

Recommendations The practitioners can utilize big data analytics within business organization for enhancing employee retention. The researcher can use technology-based devices such as computers, laptops and other foe gathering data faster.

Impact on Society The COVID-19 pandemic and lot of expenses are the implications for the researcher during conducting this research study.

Future Research Business companies seek to retain employees that are highly skilled, and experienced, these enterprises are now focused on implementing technological tools that have the ability to detect the behavioural pattern of the employees thereby helping in making strategic decisions while hiring.

Keywords Big Data, Artificial Intelligence, Big Data Analytic tools, Machine Learning, Employee Retention

INTRODUCTION

Business enterprises are adopting Big Data analytical tools for several reasons and this includes: storing data has become quite cost-effective and the technology that is required for generating data has become cheap as well. Furthermore, the process that enables an individual to process and manipulate data stored by an organization is now embedded within reliable software, with the results that an individual is able to easily extract important information or insights from the data. Later the practitioner can utilize it effectively for enhancing the organizational performance and other activities. This factor has led several business firms to adopt data-driven strategic decision-making models within several functionalities of their organization. Thus, this study attempts to explore the way business organizations are using Big Data Analytics for enhancing the employee retention rate since it allows organizations to examine the performance of each employee.

ARTIFICIAL INTELLIGENCE IN HRM

Recently AI is applicable in every discipline and every sector including human resources. The use of Artificial intelligence is supposed to provide opportunities and scope for skill development. This in turn allows HR specialists to focus on strategic initiatives. Human resources management which used to be away from technology has to now keep up with the rapid speed of technological change. AI is the expertise that directs the basis of the computer the formerly collected data. HR professionals now use Artificial intelligence to streamline processes and increase productivity. AI is now used in almost all major human resource management functions.

With the help of Artificial Intelligence, Employee Retention, an organization's ability to prevent employee turnover is gauged by the HR department more reliably than ever by utilizing customized review feedback and acknowledgments shared by employees.

Artificial intelligence tools for retaining employees mainly help organizations to monitor required vs the available skills.
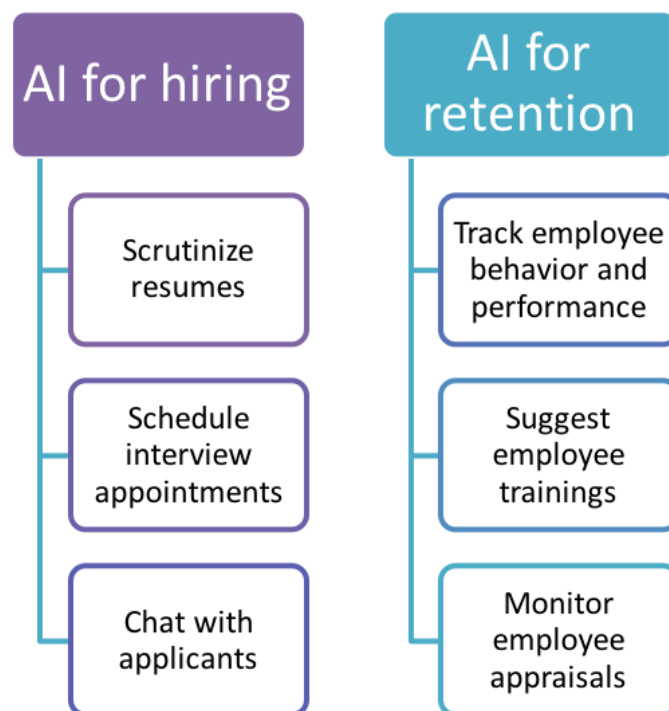
Figure 1: AI in HRM

(Source BBN Times dtd. 21 June 2018)

Employee Retention is a set of activities indulged after mapping employee behavioural patterns, performance levels. AI helps in suggesting if an employee needs assistance through training or just a feedback or even determine the level where employees ought to be relieved from their duties due to non performance. As technology is unbiased, employees can expect a fair and rational HR practice with the advent of AI.

LITERATURE REVIEW

DEPICTING BIG DATA AND ANALYTICS

Big data refers to a label generally utilized for recognizing large volumes of data generated through wearables, sensors along social media platforms. According to Sousa et al. (2019), it can be of separate format and this includes both structured and unstructured data, however, it is required to mention here that unstructured data is considered to be the most accepted kind of Big Data. Furthermore, with the assistance of **3Vs (here 3V represents the velocity, volume, and variety)** Big Data can be explained. As per the view of Nocker and Sena (2019), velocity refers to the speed at which the data is generated, and on the other hand, volumes represent the amount of data which through several sources such Internet of Things (IoT), business translation or social media are being generated. Lastly, variety represents the variety of formats in the 3Vs. Complexity and variability which are the other dimensions of Big Data are considered to be equally significant.
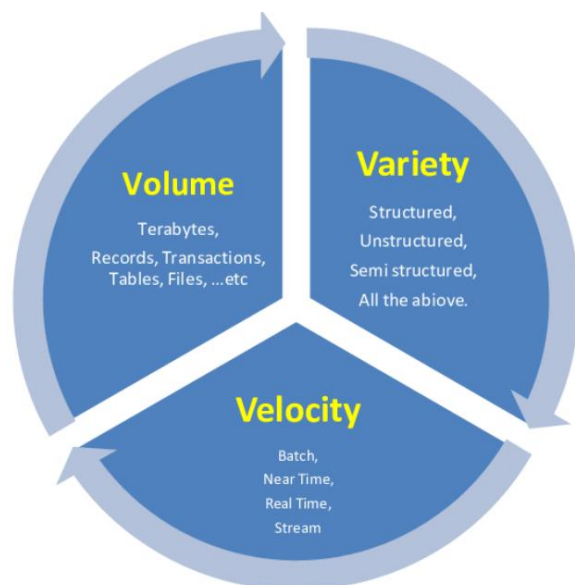
Figure 2 : 3Vs of Big Data

(Source: Nocker and Sena, 2019)

Complexity represents the concert that multiplicity of data sources usually makes it more complicated to operate with it and this is due to the divaricating data schemes underlying the gathered data. Furthermore, Variability represents the data's frequency, it means that this data can be both hourly, daily or even real-time. As stated by Prasetyo et al. (2021), the majority of business forms utilise databases in order to store complex data and these databases are sully cloud-based as well as are quite effective in regards to visualizing data and running reports. Furthermore, the working hours, details of the employees along with timesheet and rota are included within the stored data. In addition, as the concept of **Big Data** has gained popularity among business organisations the term **Analytics** has become well-known too. Although both the term big data and analytics are usually used as systems, they are two different concepts. According to Corritore et al. (2020), analytics is the procedure that enables one to analyze the Big data that is stored by a business firm. Conversely, as stated by Khanra et al. (2020), with the help of Big data organizations can store several important information regarding the employees, analyze their performance and thereby make important decisions regarding retaining talented and well-skilled employees.

DEFINING TALENT ANALYTICS

Business organisation's interest in the data of their employees is quite common now-a-days. Although the term "talent analytic" is new, organisations from the very beginning attempted to make sense of the data of the employee that they store for enhancing their skills and thereby improve their performance. In accordance with Delen and Ram (2018), the roots of the concept of talent analytics can be found in the concept of scientific management, even though this concept is getting more importance through evidence-based management which refers to decision making through examining evidence gathered from several sources. On the other hand, through **talent analytics** businesses are now able to combine a variety of data streams both external and internal to the firms and utilise them for highlighting important questions in

regards to **employee retention, hiring and HRM practices.** Nonetheless, as per the words of Surbakti et al. (2020), there exists several confusions in regards to means of talent analytics in HR practices, since it is concerned with other conventional activities of HRM that are connected with metrics.

In addition, metrics along with KPIs (key performance indicators) are extremely valuable in assessing the efficiency of the prevailing processes. In simple words, they are able to evaluate the way HR professionals are currently operating. Conversely, in accordance with, quite different from the actual aim of talent analytics which is concerned with detecting patterns in order to estimate alternative scenarios which are able to inform strategic approaches or decisions. One instance can explain this difference. Business companies in order to increase the employee retention rate can employ policies to enhance the ethnic diversity within the work environment. In regards to this, talent analytics can assist in detecting the series of possible factors that are capable of optimizing diversity along with evaluating their impact on turnover in the future. Furthermore, it would be quite different from what the KPIs and metrics are functioned to do since they are only able to encapsulate the current moment. In other words, whether the number of predictive employees of diverse ethnicity has increased and are not able to evaluate its effect on future performance.

USING TALENT ANALYTICS AND PREDICTIVE ANALYSIS FOR EMPLOYEE RETENTION

Talent analytics can assist in HR practices and the business in several ways since it is capable of bringing effective and positive impact to an organization to improve the overall performance. In order to manage the employees in an effective way, the hiring executives need to take a few considerations into account. As per the view of Saggi and Jain (2018), to make sure that the department of human resources gets fruitful outcomes while predictive hiring, acknowledging the way talent analytics operate is one of the most significant factors. Conversely, according to Garcia-Arroyo and Osca (2019), the basic concept of **predictive analysis** is to collect, refine and assess the data for finding key trending in order to predict future outcomes. Data is thus considered to be a highly relevant factor for talent analytics for analyzing and estimating the behavior of the employees. It is further required to mention here that consistent and reliable data input is highly necessary for predictive analytics. It is due to the fact that HR managers utilize the algorithms and the outcomes it gives for assisting them in their hiring decision, that valid and accurate data input is extremely crucial.
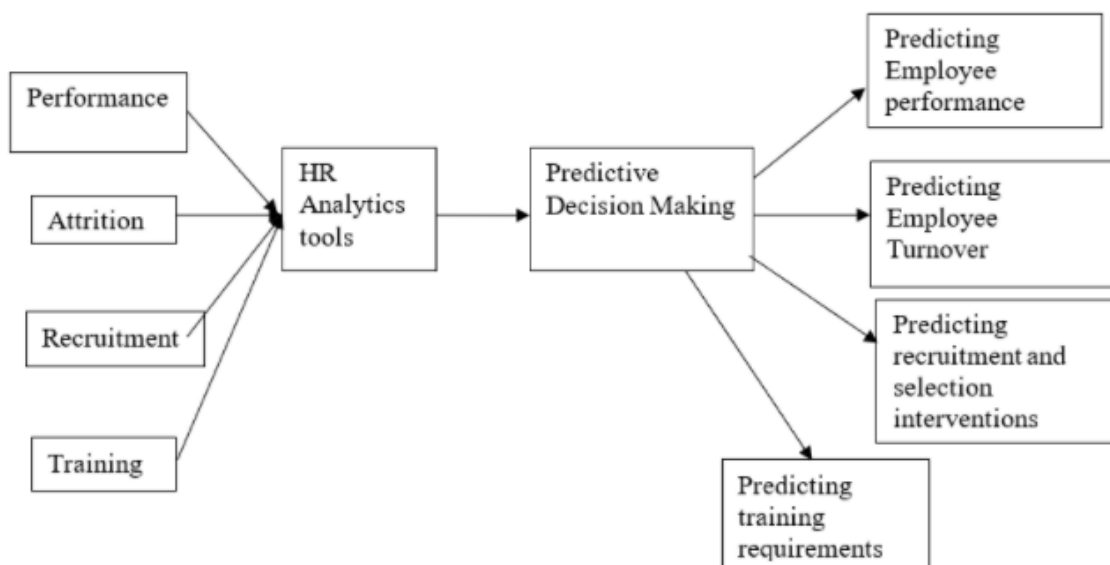
Figure 3 : An overview of predictive analysis for HR practices

(Source: Hajli et al. 2020)

In addition. The data needed in order to generate predictive outcomes are further being divided into two categories which includes **the progressive and inbound variables.** As per the words of Hajli et al. (2020), these two categories of data is gathered from several sources, the **progressive variables** are from the present and existing data of the recruited employees while the **inbound variables** are from the resumes of the staff. This is followed by the process analysis from these two variables to analyse the employees and thereby recognise a predictive result. On the other hand, there exists several kinds of inbound variables which can be adapted while recruiting a potential candidate and this includes the **working experiences, eligibility or qualification along with achievement.** Therefore, these variables are transformed into score and ranked within the potential tanks or staff. This analysis further assists the HR managers in providing the capability to cluster the staff that have been working for the firm for about a year inputted by HRM.

The potential talent that is able to match all the hiring requirements is then ranked first. As stated by Lehreret al. (2018), progressive variables include the performances of the employees, their engagements, rewards and acknowledgement, as well as development and training of the employees. Furthermore, the progressive variable can be matched with the inbound variables of the staff. An analysis then can be conducted in order to examine the similarity among progression and inbound variables. This way, a predictive analysis can be generated through the result of the analysis for employee retention. Hence, as suggested by Schweyer (2018), a valid evaluation of the staff is essential for getting an appropriate predictive outcome. Hence, both inbound and progressive variables are equally important for generating an accurate outcome.

METHODOLOGY

Big data analytics helps business organisations in several ways. Companies have to deal with several environmental and technological changes to run their business smoothly. Employee retention is one of the most significant problems that business organisations have to face these days. Change in an organisation's rules or regulation in an inappropriate manner can provoke employees to leave their job immediately. Since every organisation needs to become data driven and focus on new opportunities that are emerging. Big data analytics can help the business organisation with many resources. Along with that, it can capture, use data , create new resources using the organisation's business analyst, an executive to change things for a better future. In this research article, utilisation of big data analytics into the improvement of employee retention are discussed thoroughly. Along with that, the research is conducted based on valid journals and academic articles to better understand the research area.

Exploration of big data analytics offers several opportunities as these analytics allow data to be linked and matched for identifying undiscovered problems within the business organisations. One of the most important uses of big data analytics is reviewing and measuring the way human resources are managed in the organisation for improvement in employee retention. The method of this systematic review followed by the **PRISMA methodology** is an evidence based systematic review of this research topic. PRISMA methodology helps to understand whether all the data that is collected for this article is authentic or not in a systematic way. This article follows significant and main phases of PRISMA methodology that includes eligibility, identification along with screening. A systematic search of valid documents was conducted for better results in Google scholar. The keywords for searching were "big data", "human resource", "management" and "improvement in employee retention". After searching, valid journals and full texts academic pdfs were collected in order to help the research more critically.

In this study, the guidelines detailed by the **Prisma methodology** are followed to develop the research in order to ensure that the quality of literature selected is reviewed, screened, and evaluated for eligibility and then incorporated.
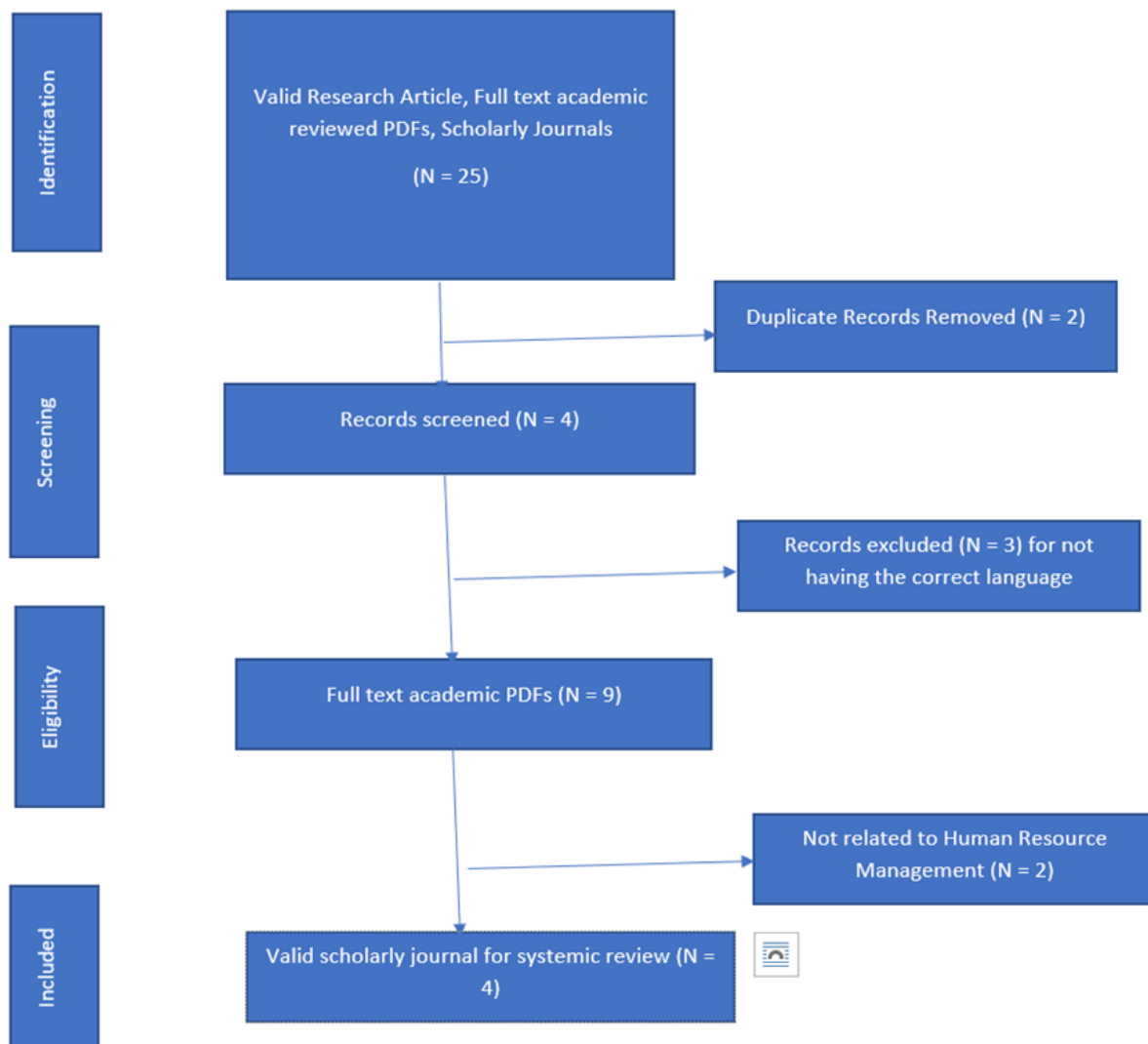
Figure 4 : PRISMA Systematic Review

(Source: Self- Developed)

Total 18 valid references are taken for this research article after dismissing all the unauthentic sources. Application of big data analytics in human resource management is often a business organization's management strategy for improving employee satisfaction and retention of employees is important. This research study has analyzed information and discussion of every aspect in a compatible manner.

RESULT AND DISCUSSION

Big data tool	Process	Performance

Apache Hadoop	Hadoop allows organisations to keep all the raw data in a more cost-effective way. This big data tool is used in business organisations for cost-effective data retention of the employees. It is an open source that is used for efficiently processing and storing data in a large amount that can range in size from gigabytes to petabytes of any processed data. It can provide highly measurable data analytics that can be scaled depending on the dataset and the size of it.	Hadoop is generally utilised for Batch Computing systems. It is fundamentally a java based open-source software framework and generally used in distributing processing that includes big datasets within several distributed nodes. It was mainly developed in order to work with several servers and each with numerous storage and copulation abilities. It has the ability to identify the failures along with providing high availability at the application layer. In regards to employee retention, Hadoop is used for storing huge amounts of both structured and unstructured data securely.
Tableau	Tableau is an effective and rapidly advancing data visualisation tool utilised in the business intelligence sector. It assists the organisation in simplifying the raw data through a relatively understandable manner. This tool helps in developing the data which is understandable for the professional at any level within an enterprise . It further allows non-technical profession to develop personalised dashboards.	With the help of a tableau **tool,** it was observed that data analysis is quite fast. According to Bilal and Oyedele (2020), the visualisation created through this tool is in the form of worksheets as well as dashboards. On the other hand, as stated by Choy and Kamoche (2021), Tableau tool provides some effective features and this includes real time analysis, data blending along with collaboration of data. One of the best things about this talk is that it requires no programming or technical skill in order to perform it. This way the HR managers through create customised dashboards and perform data analysis in a convenient manner which is required for analysing important data of the employees along with the potential talents.

Zoho Analytics	Zoho Analytics refers to a self-service data analytic and business intelligence tool that allows organisations to analyse the data visually, along with developing in unmatched data visualisation and examining unexplored information and insights. This tool is developed to bring analysis and insight into organisation data. Furthermore, while using this software, the organisation no longer requires any kind assistance from data analysis or IT	A business organisation can collaborate with Zoho Analytics partners in order to crunch big datasets, along with operating several analytical activities, can blend data as well as through graphical format and visualise the outcomes in order to explore the insights. The software further enables the enterprises in data driven decision-making process and provides a cloud-based model. As per the view of Ying et al. (2021), the HR department of a business organisation prefers Zoho analytics due to its several features, such as it can be connected to any kind of data source, can enable in operating **Deep Analysis,** help in building insightful dashboards and reports and further easily publish dashboards or reports. This way the HR managers use this software for analysing important data and make data-driven decision while hiring
Apache Cassandra	Apache Cassandra is a high-performance, highly scalable distributed database developed in order to operate with big amounts of data within several commodity servers. As per the words of Wang et al. (2019), this tool is able to offer high availability with no single point of error. Furthermore, this tool is a kind of NoSQL database. The structure of this tool is based on Amazon's Dynamo and through Google's Bigtable the data	This tool provides all possible data formats such as, unstructured structured along with semi-structured,. Furthermore, it has the ability to dynamically provide changes to the structure of the data as per the need of the user. According to Frye et al. (2020). This tool is linearly scalable. This suggested that with the help of this tool a business organisation can increase the output since through this the number of nodes can be increased in the cluster. Hence, this tool maintains a rapid response time. This suggests organisations using this tool can handle large amounts of data and

	model of Cassandra is developed. According to Madura voyal (2018), several businesses are adapting this tool since it is error-tolerated, highly consistent and a column-based database.	perform analysis required for hiring new talents.

Table 1: Systematic review

DISCUSSION

Artificial Intelligence (AI) refers to a set of technologies that allows the machine to stimulate human intelligence. As stated by Rathi (2018), AI needs the vowels of big data in order to learn and develop effectively. Hence it can be stated that Big Data depends on AI for conducting intelligent mines for insights. Furthermore, with the assistance of AI, **Machine Learning** analyses past data in order to detect that panthers and it can be about behavioural intention or absenteeism or job satisfaction of the employees in order estimate the future movements of the staff. AI based abilities eliminates the requirement for human-managed evaluation that can potentially include errors, bias, or assumption and enables the HR managers to be concerned with its employee. With data driven technologies organisation without looking at thousands of potential candidates can easily examine an entire organisation select a highly skilled and suitable employee with a potential to leave, allowing HR departments to hone in or select candidates.

In addition, through applying an AI based model and using Big Data Analytics, business organisations can improve the experience of the employees, further empower the HR managers with highly significant information and this way organisation can be able to gain maximum return on their investment. These technologies together help in detecting the employees that are most likely to leave and then suggest suitable recommendations.

CONCLUSION

In conclusion, the above study examines the way Big Data analytics assist business organizations in talent management, recruitment along with employee retention. The above study reveals that most businesses are utilizing **Talent Analytics** in order to analyze the performance of the employees along with accessing important factors that can contribute towards the overall improvement of organizational performance. Furthermore, the key finding of the study reveals that the executives are applying predictive analysis while hiring the potential talents as it helps in finding the skilled and experienced candidates for an organization by analyzing inbound and progressive variables of the employees. Lastly, in the study several Big Data analytics tools have been examined in order to analyse the way these tools are able to assist the organisation in the recruitment process.

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